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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,224	06/11/2001	Hartmut Grutzedick	1477.011	4906

7590

09/29/2003

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EXAMINER

FOONG, SUK SAN

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/806,224	<b>Applicant(s)</b> GRUTZEDIEK ET AL.	
	<b>Examiner</b> Suk-San Foong	<b>Art Unit</b> 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |                                                                                              |                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/6/03 has been entered.

#### ***Claim Rejections - 35 USC § 102***

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sakurai et al. ('022) as previously applied.

Sakurai et al. is relied on for the teachings discussed in the rejections of paragraph 2 of the Office Action mailed on 3/7/03.

4. Claims 2-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai et al. as applied to claim 1 above, and further in view of the following comments or Nemoto ('551) as previously applied.

The rejection is maintained as stated in paragraph 3 of the Office Action mailed on 3/7/03.

With respect to claims 28-30, one of ordinary skill in the art would have been lead to the recited implant energy and doping level through routine experimentation to achieve desired device dimensions and device density on the finished wafer and, therefore, desired device characteristics because device dimension and doping levels of device elements were known to affect device performance at the time of applicant's invention (MPEP 2144.05); as previously stated in paragraph 3 of the Office Action mailed on 3/7/03.

### ***Response to Arguments***

5. Applicant argues that Inayoshi teaches the "turn over of conductivity type" at the upper inner area 4 as shown in Fig. 4. However, Inayoshi discloses that the remaining p-type and p-doping concentration can be raised using the step of Fig. 4. The reference discloses preventing turn over during use of the device not reversing turn over of conductivity type resulting from the implantation step. The doping step of Fig. 4 is not a compensation doping step but increases the p-type doping conductivity at the surface region in the trough formation step. Furthermore, the claim is open to the doping step.

6. Applicant argues that Inayoshi does not suggest an  $I^2L$  element. However, Inayoshi is not relied on in the rejections. Sakura et al. in combination with the conventional process as stated in paragraph 5 of the Office Action mailed on 8/14/02 are relied on as containing the teachings of producing "an n-doped area adjoining the fringe area of the n-doped trough with the p-doped inner area and in the p-doped inner area at least one n-doped area for the creation of a structure forming an  $I^2L$  element."

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7. With respect to the arguments on page 4, 4<sup>th</sup> paragraph, applicant is directed to the arguments above and the implantation energy would be arrived at through routine optimization.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suk-San Foong whose telephone number is 703-305-0383. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 (7724, 3431, 3432).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

OK

September 10, 2003

  
George Fourson  
Primary Examiner  
Art Unit 2823